|  |
| --- |
| http://www.nhs.tusc.k12.al.us/%7Evevans/subject2/syllabus_files/image002.gif |

**Welcome to PHYSICS!**

**Northridge High School, Room 137, Ms. Evans**

**ESSENTIAL FUNCTIONS, Class Policies, Rules, and Syllabus**

***Directions*:  Please keep these pages in the FRONT of your notebook.  I will take up ONLY the signature page and will keep that documentation on file.  Please REFER TO THESE SHEETS DURING THE SEMESTER whenever you have questions about class policies, including make-up work. Thanks!**

**PHYSICS** is the study of the physical world around us, the way things work, how they move, the natural rules and patterns that we all follow.  It is the basis for all the other sciences.  Physics can be intensely interesting as it opens our eyes to the wonder around us; it can also be challenging, as many of the concepts are counter to our past experience, and some of the math and problem-solving skills don’t come easily to everyone.  **Conceptual Physics** is the text we use; it is an excellent textbook for any student needing an ***advanced physical science*** course, and wanting to gain a solid understanding of the ***concepts*** of Physics **without** as great an emphasis on mathematical computation in an AP or college level physics course.  (*Of course there is still some math in Conceptual Physics as in ANY physical science*!)

This course is designed primarily to introduce important principles, laws, ideas, and concepts of physics—***the foundation of ALL the other sciences***.  (We have the bias that **EVERYONE** should be exposed to some physics, as it helps us understand and appreciate the workings of the world and the universe in which we live!)  This is an **ADVANCED** class—it is just geared toward students who may not necessarily be especially proficient in math and science. The prerequisite is completion of Algebra I with at least a “C”. Completion of Algebra II is recommended.

Physics will focus on modern technology and practical application, and will help students become more scientifically and technologically literate.  This course includes class discussions, “hands-on” labs, “problem-solving” math labs, and projects.  Topics included are mechanics, matter, heat, sound, electricity, magnetism, light, atomic and nuclear physics, and relativity.”  The course fee is $20.00.

***NOTE:  Any student who is strongly considering a competitive field such as medicine, engineering, math, science, or physical therapy should take AP Physics if at all possible.***

**ESSENTIAL FUNCTIONS**:

                     It is essential for students in this class to ***prepare daily*** by doing ALL assigned **READING.  This is the ONLY way to achieve an understanding of physics concepts**, even though the highlights will be covered during class.  It is also essential for students to answer assigned questions and ***work assigned math problems*** ON THEIR OWN.  Copying other students’ homework is a waste of time and energy.  Very few people will do well in this class if they study only the night before the tests.  There is NO SUBSTITUTE FOR HARD WORK!!!

                     All students must have a working ability of Algebra to succeed in this class.  The ***MINIMUM REQUIREMENT/PREREQUISITE*** (as stated in the TCSS Course of Study) is **COMPLETION OF ALGEBRA I WITH AT LEAST A “C”**.  If you do not meet this prerequisite, you and your parent must sign a waiver, and you must be prepared to get some extra help.

                     **Every day, all students are expected:**  to be in class, to be on time, to bring all materials including textbook, notebook, and calculator, to be alert and attentive, to listen carefully and follow instructions, to be respectful of the teacher, other students, and property, and to meet deadlines.

                     Students must be willing to participate daily by answering questions when asked, working problems in class, working in groups, and having all homework and projects completed on time.

                     Students are expected to be in class every day, to be on time, and to meet deadlines.

                     Students are expected to COMPLETE all assignments, and to make sure they are turned in on time.  If a student is absent for all or part of the class, it is wholly that STUDENT’S RESPONSIBILITY to get notes/assignments they missed, and to arrange for make-up with the teacher ***within two days*** of the absence.

* Students must be able to log onto the online homework site [https://quest.cns.utexas.edu/](https://quest.cns.utexas.edu/%20) to retrieve and post homework by deadlines.

                     Students are expected to be able to work in the library, and be self-motivated enough to work on out- of-class projects such as building toothpick bridges and preparing presentations on physics research topics.

                     Students are expected to ***ASK QUESTIONS*** during and/or after class if there is anything they do not understand.  If no questions are asked, the teacher will assume that no extra clarification is needed.

                     Students must also be able to do each of the following:

                     Understand, follow, and apply all of the basic safety requirements.

                     Collect and analyze data

                     Effectively and safely manipulate apparatus

                     Perform laboratory work and other group activities

                     Prepare and read graphs

                     Prepare written reports

                     Communicate effectively in writing and orally

                     Solve problems and follow logical sequences

                     Read and comprehend the textbook, notes, and lab instructions

                     Prepare collections and projects

                     Comprehend readings, study, and independently take tests

                     Complete assignments and learn related terminology

                     Work effectively in groups or teams

**OTHER NECESSARY RULES FOR A GREAT SEMESTER**:

1.       Be nice to everyone in the class at all times, especially the teacher. ;-)

2.       Be respectful of yourself, your classmates, the teacher, and all property and materials.

3.       Talk one at a time, PLEASE.  (I know this goes along with #2, but I cannot say it enough.)

4.       LISTEN and follow directions the first time they are given.

5.       READ THE WHITE BOARD EVERY DAY for important dates, homework assignments, etc.

6.       No eating in class, especially crumbly food (roach and mouse bait).

***7.*** Do your best.  Remember:  There is ***NO SUBSTITUTE FOR HARD WORK!***

8.       Come to school every day, and come on time.  ***Exception***:  If you are REALLY SICK, please do NOT come to school and give us your germs!!!

9.       If you have a problem, COME TALK WITH ME ABOUT IT.   (SOONER rather than later.)

10.   No sleeping or putting heads down in class.

11.   No backpacks on tables.

12.   No leaving class unless there is an emergency.  Bathroom breaks during the first or last five minutes of class ONLY.  If you leave class, you must sign out, have a pass, and wear your I.D.

13.   If you get cold easily, bring a jacket.

14.   **BE POSITIVE!!!**  Attitude is everything.  PLEASE--***NO WHINING***!!!!!!!!

**NECESSARY MATERIALS TO BRING EVERY DAY:**

1.       Any calculator, preferably one with exponents (scientific notation) and square root.  Graphing calculators are great if you know how to use them, but **NOT** necessary.  I suggest a SIMPLE scientific calculator like the Texas Instruments TI 30 Stat (Solar Powered).   TI 31 and 32 series are also good.  Things like exponents and square roots are quick and easy on these calculators.

2.       A three ring notebook.  Any 3-ring notebook, maybe 1” to 2” is fine.  You need to bring your physics notebook to class every day!    Keep ALL physics materials in ***ONE*** notebook!

3.       Loose-leaf paper at all times in the notebook.

4.       Optional but quite helpful:  Dividers in the notebook to stay organized.

(Class Notes, Homework, Labs, Handouts, Graded Papers, Grade List)

5.       A pencil with eraser for math problems and scantron tests.

6.       A pen for writing some things so I don’t go blind.

7.       Optional but quite helpful:  A protractor or geometer (sheet with the whole unit circle), graph paper, and white out.

8.       Your textbook (and homework if assigned).

**9.** A willingness to learn, think, and prepare each day…and again,

**10.  A POSITIVE ATTITUDE!**

**FEES**:  There is a $25.00 course fee for this class, which is due immediately.  *Extra points may be awarded if paid within the first two weeks of the semester!*

**GRADES**:  In a given 6 weeks grading period, there are USUALLY 3-4 major tests, several quizzes, several labs and activities, and usually one major project.  Most tests and quizzes will be announced, but some will be “pop tests,” or unannounced.  ***Participation*** *also counts toward the final grade, and this includes but is not limited to:  Answering questions in class, having homework completed, doing problems on the board, contributing equally in group work, following directions, following rules and procedures, being a positive asset to the class, being prepared, bringing materials, cooperating respectfully with instructor and peers, etc.*  The **breakdown is normally 40% Tests, 20% Quizzes, 20% Homework, 20% Classwork (Labs/Activities/Daily Participation).  This varies depending on the number of grades in each category, and is subject to change.**  The semester exam is COMPREHENSIVE, and counts 25% of the final grade.  Each of the three 6-weeks grades also counts 25%.  Everything should be kept in your notebook for the ENTIRE SEMESTER, as you may be asked to compile and turn in a portfolio of some of your work, which may count as part of the Final Grade.

**EXTRA CREDIT:** I ***rarely*** give extra credit, as there is no such thing at the college level, and there are many opportunities to earn points in this class.  However, I reserve the right to offer extra credit for things such as ***exemplary behavior, outstanding participation, or extra work done***.

**TUTORING/EXTRA HELP:  I am available for tutoring and extra help every Wednesday after school from 3:30 to 4:30.** Sometimes I can stay later, or before school, or on different days ***IF*** you arrange it with me before hand.  I encourage EVERY STUDENT to come talk with me if you are having any problems with this class!!!   ***PLEASE*** do not wait until you feel overwhelmed--a little one-on-one help can go a long way, and that is almost impossible for me to provide during class with over 30 students per class.

**CONFERENCES:** If at any time during the semester, you should have a failing or unsatisfactory grade, you or your parent have the right to schedule a parent-teacher-student conference in which we will discuss your grades and options. \*\*\***Parents may call me at Northridge 759-3590, or email me at** [**vevans@tusc.k12.al.us**](vevans@tusc.k12.al.us)

**REASONABLE ACCOMMODATIONS:  All requests by parents and students for reasonable accommodations in this class will be considered and provided if possible.  Please notify me of any special needs immediately.**

**DISCIPLINARY ACTIONS:** Although no problems are anticipated, policies and procedures from the Code of Conduct and the Student Handbook will be followed, as these are approved and mandated by the Board of Education.  If there are minor discipline problems within my class (such as tardies and other infractions), AFTER SCHOOL DETENTION/WORK DETAIL MAY BE ASSIGNED to be held in the teacher’s room or on this campus after school on designated dates.  Any student receiving detention who neglects to show up will automatically receive a DISCIPLINE REFERRAL to the administration; generally any student skipping a detention automatically receives Saturday School/Extended Work Opportunity, or ISS.  Also any major violations will be handled with a discipline referral.  *Any work missed while a student is out due to a discipline referral will receive a grade of ZERO, and cannot be made up.*

*-------------------------------------------------------------------------------------------------------------------------------------------*

**HONOR CODE:** I understand that talking, passing notes, or communication of ANY KIND during a quiz or test is considered cheating, ***even if I am finished and have already turned in my paper***.  At the teacher’s discretion, I will either be given a zero, or points will be taken from my grade if I participate in any communication with other students during a testing situation.  Any academic misconduct will carry the maximum penalties allowed by the Board of Education.   In addition to receiving a zero or a reduced grade, this may include parent conference, detention, work duty, ISI, Saturday school, a report in the permanent record, removal from certain groups and activities (such as Honor Society), and/or other consequences.

**MAKE-UP POLICY:** If I am absent, I understand that it is completely MY RESPONSIBILITY as an INDIVIDUAL STUDENT to call the teacher during the school day at 759-3590, or to call a classmate to get my assignments ***BEFORE*** RETURNING TO SCHOOL.  I understand that all make-up work should be completed within **TWO DAYS** of returning to school, and I understand that I must make these arrangements with the teacher ***ON THE DAY I RETURN TO SCHOOL***.   I furthermore understand that if I miss a test or other evaluation, I MAY be expected to make it up **ON THE DAY I RETURN** (*especially for a single day absence*).  Regular make-up time is right after school on ***Wednesday (the FIRST Wednesday after the absence)*** unless other arrangements are required by the teacher or requested by the student ***beforehand***.   ***Any work not made up in a timely manner  will receive a zero.  NO work may be made up beyond 5 days after the absence.  An absence must be marked “excused” in the computer by the main office within the above timelines in order for make-up work to be given or graded; otherwise missed work will receive a grade of “0.”***

**CURRICULUM:  Course content follows and is determined by the Alabama State Course of Study—Science, the National Science Standards, the Tuscaloosa City Schools Curriculum Guide, and the Standards covered on the Alabama High School Graduation Exam.   See instructor or the Alabama State Department of Education website (**[**http://www.alsde.edu**](http://www.alsde.edu/)**) for more details.**

**Now—after all that, I EXPECT US ALL TO HAVE A GREAT SEMESTER!!!!!  ;-)))**

*This page must be shown to Ms. Evans within the first five days of class.  Please keep all the pages of this handout in the* ***FRONT of your notebook****.  You will be given a grade for this.  Thanks.*

 Print Student Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Period\_\_\_\_\_\_\_\_\_\_  Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**To the student:  Please sign, indicating that you have been given a copy of the course policies, essential functions, and syllabus.  By signing, you are saying:**

***I have read, understand, and agree to abide by everything in the rules, policies, and essential functions***.  ***This includes the honor code and the make-up policy.***

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_           \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

STUDENT SIGNATURE                                                      DATE

**To the parent or guardian:  Please sign, indicating that you have read and understand the course policies, essential functions, and syllabus.** Education is truly a partnership between parents, teachers, and students.  I look forward to working with each of you in our shared commitment to helping every student succeed.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_           \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PARENT SIGNATURE                                                         DATE

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_           \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PARENT PHONE NUMBER(S)                                          PARENT EMAIL

**PHYSICS SYLLABUS--EVANS**

  (*Tentative and subject to change without notice to meet the needs of students and school schedule*):

|  |  |  |
| --- | --- | --- |
| **Week** | **TOPICS** | **Alabama State Course of Study** |
| pre 1  & 1 | Lab Safety, Rules and Intro. to Physics, Historical Reference, Career and Life Relevance, Problem-Solving | 1.         Understand fundamental assumptions about the universe upon which the scientific enterprise is based. |
| 2 | Measurement, Metrics, SI, Significant Figures, Exponents, Graphing | 2.                   Discuss science as a body of knowledge and an investigative process.  19.     Explain the significance of slope and area under a curve when graphing motion data. |
| 3 | Conversions, Dimensional Analysis, and Introduce Vectors; **Interactive Physics Labs--Computer Sims** | 3.                   Conduct scientific investigations systematically  20.               Analyze vector problems graphically and trigonometrically.  21.     Use vectors to analyze the motion of an object acted upon by more than one force. |
| 4 | Velocity and Acceleration; Vector Addition; Forces (including Gravity) | 18.     Understand the interrelationships among mass, distance, force, velocity, acceleration, and time. |
| 5 | Newton’s Laws;  Kinematics (d-v-a-t) Problems | 9.   Solve for unknown quantities by manipulating variables. |
| 6 | Vectors and Concurrent Forces.  **ALABAMA SCIENCE IN MOTION LAB EQUIPMENT** | 16.     Collect data and construct and analyze graphs, tables, and charts using tools such as computers or calculator-based probeware.  17.     Describe the basic natural forces. |
| 7 | Two Dimensional Motion—Projectiles; Gravitation |  |
| 8 | Circular and Rotational Motion |  |
| 9 | Periodic and Simple Harmonic Motion |  |
| 10 | Torque and Parallel Forces; AHSGE (Graduation Exam Review and Testing) |  |
| 11 | Conservation of Energy; Work and Power; Momentum.  **Science in Motion Lab Equipment** | 6. Demonstrate the ability to choose, construct, and/or assemble appropriate equipment for scientific investigations.      8.  Use mathematical models, simple statistical models, and graphical models to express patterns and relationships determined from sets of scientific data.  22. Demonstrate an understanding of momentum.  24.  Apply quantitative relationships involving mass, weight, distance, work, power, gravitational potential energy, and kinetic energy. |
| 12 | **Phases of Matter; Molecular, Atomic, Nuclear Physics** | 37.     Describe similarities in the calculation of electrical force, magnetic force, and gravitational force between objects. |
| 13 | Engineering, Structures, **CAD**, and **BRIDGE BUILDING COMPETITION** |  |
| 14 | Relativity and Modern Physics; Astronomy and Aerospace; **Build and Launch Rockets** | 23.  Explain planetary motion and navigation in space in terms of Kepler's and Newton’s laws. |
| 15 | **Group Projects on Physics Topics:**  I. Waves:  A.     Mechanical and Sound  B.     Light          The Nature of Light          Reflection, Refraction, Diffraction          Color  II. Major Principles:       Bernoulli's, Pascal's, and Archimedes' | 6.       Demonstrate the ability to choose, construct, and/or assemble appropriate equipment for scientific investigations.  11.        Choose appropriate technology to retrieve relevant information from the Internet such as electronic encyclopedias, indices, and databases.  13.        Practice responsible use of technology systems, information, and software such as following copyright laws.  27.        Classify waves according to type.  28.        Explain wave behavior in terms of reflection, refraction, and diffraction.  29.        Differentiate between constructive and destructive wave interference.  30.        Relate physical properties of sound and light to wave characteristics.  31.        Explain the impact of change in media upon the speed, frequency, and wavelength of a wave.  33-36 Standards on Light Reflection, refraction, diffraction, polarization |
| 16 | III.   The Life Cycle of Stars  IV.   Plasma Physics and the Aurora  V.    Entropy, Fractals, and Thermodynamics | 7.     Apply critical and integrated science-thinking skills.  25.     Explain the laws of thermodynamics.  26.        Describe relationships qualitatively and quantitatively between changes in heat energy and changes in temperature. |
| 17 | VI.    Electricity and Magnetism  VII.    Atomic Reactions:  In Stars, In Bombs,           and In Nuclear Reactors  VIII. Radiation  IX.    Alternative Energy | 11.   Use written and oral communication skills to present and explain scientific phenomena and concepts individually or in collaborative groups using technical and non-technical language.  32.     Describe how different components of the electromagnetic spectrum are used for communication purposes.  40.        Apply quantitative relationships among charge, current, potential energy, potential difference, resistance, and electrical power for simple series, parallel, or combination DC circuits. |
| 18 | Current Physics & Technology; **EXAMS** | 4.                   Exhibit behaviors appropriate to the scientific enterprise consistently.  12.     Analyze the advantages and disadvantages of widespread use of and reliance on technology.  14.     Evaluate technology-based options for lifelong learning.  15.     Identify the uses of technology in scientific applications. |

Please note:  Life skills such as problem-solving, critical thinking, and communication will be fostered through discussions, debate, journal/essay writing, analyzing science videos and articles, and other non-traditional methods.  Flexibility and ability to respect others will be keys to success in this class.